WHAT IS CLAIMED IS:

1. A signal transmission system of an orthogonal frequency division multiplexing using a plurality of carriers to transmit OFDM signal comprising a transmitting apparatus and a receiving apparatus, said receiving apparatus comprising;

an input unit for applying said OFDM signal from said transmitting apparatus:

a fast Fourier transforming unit coupled with said input unit, for separating said OFDM signal into base-band signals including pilot signals of respective carriers;

an interpolation unit coupled with said fast Fourier transforming unit, for interpolating said pilot signals in a time-axis direction and a frequency-axis direction to calculate reference signal vectors of said carriers in which said pilot signals are not inserted;

a demodulation unit coupled with said interpolation unit, for decoding to be produced as information codes:

a delay unit coupled with said a Fourier transforming unit and said demodulation unit, for adjusting a delay time of said base-band signals passing therethrough; and

a control unit coupled with said interpolation unit, for changing frequency band characteristics of said interpolation unit.

2. A signal transmission system according to

claim 1, wherein said interpolation unit comprises a time-direction interpolation circuit and a frequency-direction interpolation circuit, and said control unit controls frequency band characteristics of said time-direction interpolation circuit on the basis of transmission condition of said OFDM signal.

3. A signal transmission system according to claim 2, wherein said control unit includes at least two memories, each of which is stored different coefficient values.

4. A signal transmission system according to claim 3, wherein one of said memories is stored with coefficient values relating to the characteristic suitable for a high-speed mobile radio transmission and the other of said memories is stored with coefficient values relating to the characteristic suitable for a fixed condition or a low moving condition of said receiving apparatus.

5. A signal transmission system according to claim 2, wherein said time-direction interpolation circuit comprising a circuit for separating said pilot signal and a transversal type low pass filter.

6. A signal transmission system according to claim 2, wherein said control unit controls the delay time of said delay unit when the frequency band characteristics of said time-direction interpolation circuit are changed.

7. A receiving apparatus for a signal

transmission system of an orthogonal frequency division multiplexing type using a plurality of carriers orthogonal to one another to transmit information codes, said receiving apparatus receiving, signals wherein pilot signals are inserted in the carriers of a predetermined frequencies at intervals of a predetermined number of symbols in the direction of the time-axis and in the carriers at intervals of a predetermined number of carriers in the direction of the frequency-axis, and reference signal vectors utilized as the basis for demodulation being produced from the pilot signals extracted from the received signal, said receiving apparatus comprising:

an interpolation circuit for interpolating said pilot signals extracted from said received signal in said time-axis direction and said frequency-axis direction to calculate reference signal vectors of carriers in which pilot signals are not inserted;

said interpolation circuit including a time-axis direction interpolation circuit for interpolating the extracted pilot signals to produce the reference signal vectors of carriers in which said pilot signal is not inserted in the symbol having the same frequency,

said receiving apparatus further comprising circuits for changing frequency band characteristics of said time-axis direction interpolation circuit.

8. A receiving apparatus according to Claim 7,

wherein said time-axis interpolation circuit includes a circuit for separating said pilot signals from said received signal and a low pass filter of a transversal type supplied with a predetermined number of separated pilot signals to interpolate them, and said circuits, for changing frequency band characteristics change tap coefficient values of said low pass filter of the transversal type.

9. A receiving apparatus according to Claim 8, comprising a delay circuit for delaying said received signal and a circuit for controlling a delay time of said delay circuit so as to adjust a timing of the signal delayed by said delay circuit and the pilot signals obtained by said interpolation circuit when the frequency band characteristics of said interpolation circuit are changed.

10. A receiving circuit according to Claim 8, wherein said circuit for changing said frequency band characteristics includes memories for storing a set of different tap coefficient values for giving the frequency band characteristics different from each other to said low pass filter.

11. A receiving apparatus for a signal transmission system of an orthogonal frequency division multiplexing type in which a plurality of carriers orthogonal to one another to transmit information codes, said receiving apparatus receiving signals wherein pilot signals are inserted in each symbol of

said plurality of carriers continuously in the direction of the time-axis and at intervals of a predetermined number of carriers in the direction of the frequency-axis, and reference signal vectors utilized as the basis for demodulation being produced from the pilot signals extracted from the received signal, said receiving apparatus comprising:

a filter circuit for limiting a frequency band width of said pilot symbols extracted from said received signal and arranged in said time-axis direction; and

a frequency-axis direction interpolation circuit for interpolating said pilot signals from said filter circuit in the direction of said frequency axis of each symbol to produce reference signal vectors of carriers in which said pilot signals are not inserted.

12. A receiving apparatus according Claim 11, further comprising circuits for changing frequency band characteristics of said filter circuit.

13. A receiving apparatus according to Claim 12, further comprising a circuit for supplying said pilot signals extracted from said received signal to said frequency-axis direction interpolation circuit while bypassing said filter circuit.

14. A receiving apparatus according to Claim 12, wherein said filter circuit includes a low pass filter of a transversal type and said circuits for changing said frequency band characteristics change tap

coefficient values of said low pass filter of the transversal type.

15. A receiving apparatus according to Claim 12, further comprising a delay circuit for delaying said received signal and a circuit for controlling a delay time of said delay circuit so as to adjust a timing of the signal delayed by said delay circuit and the pilot signals obtained by said interpolation circuit.

16. A receiving apparatus according to Claim 14, wherein said circuits for changing said frequency band characteristics include memories for storing a set of different coefficient values for giving the frequency characteristics different from each other to said low pass filter.